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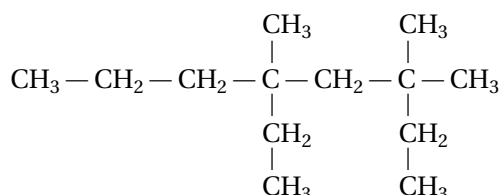
HYDROCARBON COMPOUNDS

Practice Problems

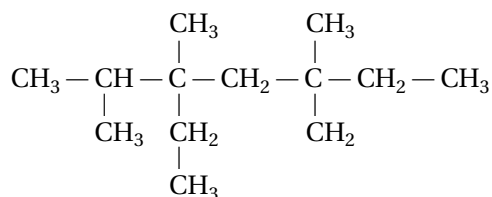
In your notebook, solve the following problems.

SECTION 22.1 HYDROCARBONS

1. Name this hydrocarbon, according to the IUPAC system.



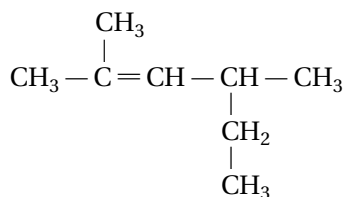
2. Name this hydrocarbon, according to the IUPAC system.



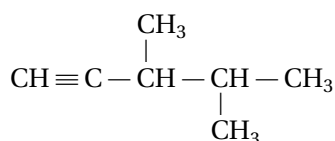
3. Write the structural formula for each of the following compounds.
- 3-ethyl-2,3-dimethylpentane
 - 3,4-diethylhexane
 - 2,3,4,5-tetramethylnonane
4. Draw condensed structural formulas for the straight-chain alkanes with seven and eight carbons.
5. How many single bonds are in a hexane molecule?

SECTION 22.2 UNSATURATED HYDROCARBONS

1. Name this compound, according to the IUPAC system.



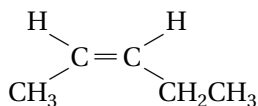
2. Name this compound, according to the IUPAC system.



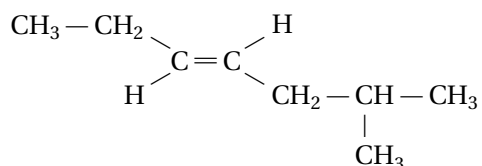
3. Name and draw all of the alkynes with the molecular formula C_5H_8 .
4. Write structural formulas for the following hydrocarbons.
 - a. 3,5-dimethyl-1-hexene
 - b. 4-methyl-1-pentene
 - c. 3,3-dimethyl-1-butyne

SECTION 22.3 ISOMERS

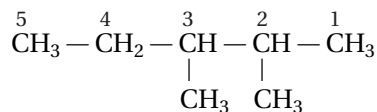
1. Name this compound, according to the IUPAC system.



2. Name this compound, according to the IUPAC system.



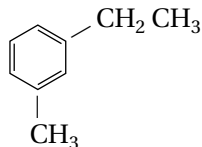
3. Write the structural formula for *trans*-2-heptene.
4. Which of the following can exist as *cis*, *trans* isomers?
 - a. 2-butene
 - b. 1-butene
 - c. 2-methyl-2-butene
 - d. 3-hexene
5. Identify the asymmetric carbon in the following compound.



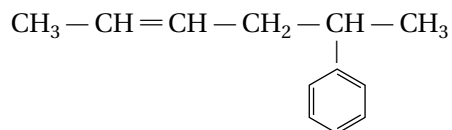
6. Which of the following compounds have an asymmetric carbon?
 - a. $\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH} - \text{CH}_3 \\ | \quad | \\ \text{OH} \quad \text{CH}_3 \end{array}$
 - b. $\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH}_3 \\ | \\ \text{CH}_3 \end{array}$
 - c. $\begin{array}{c} \text{CH}_3 - \text{CH} - \text{F} \\ | \\ \text{OH} \end{array}$

SECTION 22.4 HYDROCARBON RINGS

1. Name this compound, according to the IUPAC system.



2. Name this compound, according to the IUPAC system.



3. Write structural formulas for the following compounds.

- 1,3-dimethylcyclohexane
- cis*-1,2-diphenylethene
- 1,4-diethylbenzene

SECTION 22.5 HYDROCARBONS FROM EARTH'S CRUST

- Write a balanced equation for the complete combustion of 2-methylheptane.
- Describe three types of fuels obtained by refining petroleum.